CLAIM AMENDMENTS

1. - 39. (Canceled)

40. (Previously Presented) Apparatus for use in tissue engineering, said apparatus comprising:

a scaffold structure having a porosity of 30%-80% and formed of a plurality of horizontal layers of melt extrusion filament materials formed at a liquefier temperature of 120°C ± 10°C and an envelope temperature of 25°C ± 2°C;

vertical walls forming each of said plurality of horizontal layers of material, said walls of each layer of said plurality of horizontal layers each having a height, each being horizontally separated from one another, and defining an orientation;

adjacent pairs of said vertical walls of each of said plurality of horizontal layers of material forming channels therebetween, said channels having a depth and a width created by said height of said walls and said horizontal separation of said adjacent pairs of said vertical walls, respectively;

adjacent layers in said plurality of horizontal layers of material being in different orientations to one another wherein said orientation defined by adjacent ones of said layers of said walls of said plurality of horizontal layers differ from one another, said different orientations providing a group of cross-points to allow adhesion between said adjacent layers and providing interconnectivity between said channels throughout said scaffold structure;

said scaffold horizontal layers of melt extrusion materials comprising at least one of PCL and PCL/HA, formed with an FDM 3D

rapid prototyping system, the FDM system operating in X, Y, and Z axes;

wherein the orientations of said walls are in lay-down patterns of 0°/60°/120° forming horizontally disposed triangular pores having a size in the range of 200-780μm.

41. – 42. (Canceled)

43. (Original) Apparatus for use in tissue engineering according to claim 40 wherein said vertical walls have a linear shape.

44. (Original) Apparatus for use in tissue engineering according to claim 40 wherein said vertical walls have a curved shape.

45. – 47. (Canceled)

48. (Currently Amended) Apparatus for use in tissue engineering, said apparatus comprising:

a scaffold structure having a porosity of 30%-80% and formed of a plurality of horizontal layers of melt extrusion filament materials formed at a liquefier temperature of 120°C ± 10°C and an envelope temperature of 25°C ± 2°C;

vertical walls forming each of said plurality of horizontal layers of material, said walls of each layer of said plurality of horizontal layers each having a height, each being horizontally separated from one another, and defining an orientation;

adjacent pairs of said vertical walls of each of said plurality of horizontal layers of material forming channels

therebetween, said channels having a depth and a width created by said height of said walls and said horizontal separation of said adjacent pairs of said vertical walls, respectively;

adjacent layers in said plurality of horizontal layers of material being in different orientations to one another wherein said orientation defined by adjacent ones of said each layer of said walls of said plurality of horizontal layers differ from one another, said different orientations providing a group of cross-points to allow adhesion between said adjacent layers and providing interconnectivity between said channels throughout said scaffold structure;

said scaffold horizontal layers of melt extrusion materials comprising at least one of PCL and PCL/HA, formed with an ~~EDM~~ FDM 3D rapid prototyping system, the FDM system operating in X, Y, and Z axes;

wherein said orientation of said walls are in lay-down patterns of 0°/72°/144°/36°/108° forming five-sided polygonal pores having a size of 200-780μm.

49. - 55. (Canceled)

56. (Previously Presented) The apparatus in accordance with claim 48 wherein said vertical walls exhibit at least one of a linear shape and a curved shape.

57.-58. (Canceled)

59. (Previously Presented) The apparatus in accordance with claim 40 wherein the horizontal layers are provided with

substantially equal pore sizes.

60. (Previously Presented) The apparatus in accordance with claim 40 wherein said vertical walls are 260—360 um in diameter.

61. (Previously Presented) The apparatus in accordance with claim 40 wherein the scaffold structure further comprises a bioresorbable ceramic material.

62. (Previously Presented) The apparatus in accordance with claim 48 wherein the horizontal layers are provided with substantially equal pore sizes.

63. (Previously Presented) The apparatus in accordance with claim 48 wherein said vertical walls are 260-360 um in diameter.

64. (Previously Presented) The apparatus in accordance with claim 48 wherein the scaffold structure further comprises a bioresorbable ceramic material.

65. (New) Apparatus for use in tissue engineering, said apparatus consisting of:

a scaffold structure having a porosity of 30%-80% and formed of a plurality of horizontal layers of melt extrusion filament materials formed at a liquefier temperature of 120°C ± 10°C and an envelope temperature of 25°C ± 2°C;

vertical walls forming each of said plurality of horizontal layers of material, said walls of each layer of said plurality of horizontal layers each having a height, each being horizontally separated from one another, and defining an orientation;

adjacent pairs of said vertical walls of each of said plurality of horizontal layers of material forming channels therebetween, said channels having a depth and a width created by said height of said walls and said horizontal separation of said adjacent pairs of said vertical walls, respectively;

adjacent layers in said plurality of horizontal layers of material being in different orientations to one another wherein said orientation defined by adjacent ones of said layers of said walls of said plurality of horizontal layers differ from one another, said different orientations providing a group of cross-points to allow adhesion between said adjacent layers and providing interconnectivity between said channels throughout said scaffold structure;

said scaffold horizontal layers of melt extrusion materials comprising at least one of PCL and PCL/HA, formed with an FDM 3D rapid prototyping system, the FDM system operating in X, Y, and Z axes;

wherein the orientations of said walls are in lay-down patterns of 0° / 60°/120° forming horizontally disposed triangular pores having a size in the range of 200-780μm.

66. (New) Apparatus for use in tissue engineering, said apparatus consisting of:

a scaffold structure having a porosity of 30%-80% and formed of a plurality of horizontal layers of melt extrusion filament materials formed at a liquefier temperature of 120°C ± 10°C and an envelope temperature of 25°C ± 2°C;

vertical walls forming each of said plurality of horizontal layers of material, said walls of each layer of said plurality of

horizontal layers each having a height, each being horizontally separated from one another, and defining an orientation;

adjacent pairs of said vertical walls of each of said plurality of horizontal layers of material forming channels therebetween, said channels having a depth and a width created by said height of said walls and said horizontal separation of said adjacent pairs of said vertical walls, respectively;

adjacent layers in said plurality of horizontal layers of material being in different orientations to one another wherein said orientation defined by adjacent ones of said each layer of said walls of said plurality of horizontal layers differ from one another, said different orientations providing a group of cross-points to allow adhesion between said adjacent layers and providing interconnectivity between said channels throughout said scaffold structure;

said scaffold horizontal layers of melt extrusion materials comprising at least one of PCL and PCL/HA, formed with an FDM 3D rapid prototyping system, the FDM system operating in X, Y, and Z axes;

wherein said orientation of said walls are in lay-down patterns of 0° /72°/144°/36° / 108° forming five-sided polygonal pores having a size of 200-780μm.